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ABSTRACT

Informal reading models, although more like metaphors than truly scientific models, may be just as useful in making instructional decisions as formal models are in physical science. Models are a vital part of the instructional process even when teachers are not consciously aware of their presence. Three classes of reading models are bottom-up models, which assume that the translation from print to meaning begins with the print; top-down models, which assume that the translation process begins in the mind of the reader with an hypothesis or guess about meaning; and interactive models, which assume that the two types of processing are interactive. Components that are included in most models of reading are attention and capacity, memory, sensory capabilities, and perception, while common exclusions from models are intelligence, motivation, and instructional setting. Alternative, and sometimes opposing, decisions derive from alternative models in the areas of initial program emphasis, reading subskills, skill sequence, integration of reading activities, amount and type of practice, attention to oral reading errors, selection of reading materials, and diagnosis and remediation of reading difficulties. Teachers should try to articulate and make explicit whatever implicit models seem to guide their teaching behavior. (GW)

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CENTER FOR THE STUDY OF READING

Reading Education Report No. 7

BASIC PROCESSES AND INSTRUCTIONAL PRACTICES IN TEACHING READING

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Basic Processes and Instructional Practices in Teaching Reading

Our purpose in writing this paper is to convince teachers of the truth and value of the well-worn homily, Nothing is as practical as a good theory.

Models and theories, the stuff of academic scholarship, are elusive. For purposes of this paper, we have adopted the following definitions of theory and model. A theory is an abstract representation of an explanation for a particular set of phenomena. For example, in physics there exists a kinetic theory of gases, which tries to explain the behavior of gases in the real world. A model is an operational definition of a theory. For the kinetic theory of gases there could be many models, the most commonly accepted is that the behavior of gases is a function of the effects of heat, pressure, and volume on the individual molecules of a particular gas. In the case of the kinetic theory of gases both the theory and the model are formal, rigorous, and well-specified, involving several well-validated laws that are commonly expressed as mathematical formulas. When you took high school physics, you probably learned some of these formulas.

When we apply the notions of theory and model to reading and other instructional endeavors, the relationships between the two are not so formal, rigorous, or well specified. What we really have in reading are informal models, more like metaphors than truly scientific models. Usually a model of reading consists of some explanatory statements accompanied by a diagram of the components of the model and a few tentative assertions

about how those components relate to one another. It is rare to find instructional models that have achieved the formality and rigor of scientific models used in physical science.

We make these points about the informal nature of most reading models not to denigrate them but rather to point out that even the best of our theorists have difficulty achieving the goal of truly scientific rigor. For purposes of making instructional decisions, however, informal models of reading may be just as useful as formal models are in physics.

One of our basic assertions is that models are a vital part of the instructional process even when teachers are not consciously aware of their presence. Most, if not all, teachers operate with at least an implicit model of reading, which may or may not conform to their goals. And to discover what these models were, we would need only to observe them teach for a period of time. In fact, Harste and Burke (1977) have conducted a series of studies to do precisely that. They conclude that every teacher (and also every child) carries an implicit model of reading around in his head that can be discovered through observation. One of the purposes of the Harste and Burke studies is to bring teachers to the point where they can recognize consistencies and inconsistencies between their goals for reading instruction and the means they use to achieve these goals.

We hope, as a result of reading and discussing our ideas, you will realize that:

1. You already use some components of models, at least implicitly, in making decisions.
2. The model one uses to deliver instruction makes a difference; that is, different models predict different (and sometimes opposing) instructional methods and strategies.
3. You can read and study the literature on models and theories and extract some useful ideas for your classroom.

Models of the Reading Process

Whatever model one uses to represent the reading process, certain basic assumptions must be accounted for. First, there must be a provision for storing whatever knowledge structures (e.g., concepts, expectations about real world events, and relationships among concepts and/or events) that have been accumulated through experience. Second, there must be a mechanism for translating graphic symbols on a page into a representation that can be matched against those in storage. The variety of competing models of reading results from additional assumptions about the relationship of these two basic assumtions, for example, how the translation actually occurs or whether the existing store of knowledge structures assumes a passive or an active role in the translation process.

Similarly, when reading models are put to instructional uses (i.e., when we trace out their implications for teaching and learning), they share the common goal of producing readers who are proficient at using a

variety of cues in identifying words and meaning, who are, in short, efficient translators from print to meaning.

Top-down Versus Bottom-up Models

A basic difference among models of reading concerns how the translation from print to meaning is initiated. Bottom-up models assume that the translation process begins with the print (in letter or word identification) and proceeds through progressively larger linguistic units, ending in meaning. The first task of the reader is to decode the symbols into sound representations. This accomplished, the reader can use his natural (and presumably well-developed) oral language comprehension ability to obtain meaning. In such a model, reading is the same as listening, but with the obvious additional step of translating print into speech. The reader assumes a relatively passive role in the translation process; that is, the only knowledge he brings to bear is knowledge of symbol-sound correspondences. Perhaps the clearest example of such a model of reading has been espoused by Gough (1972).

By contrast, top-down models assume that the translation process begins in the mind of the reader with an hypothesis or guess about the meaning of some unit or print. That hypothesis can come from a variety of sources. Once the reading process has begun, obviously the context provided by previously translated text can provide such hypotheses. Before reading has started (and while it is occurring), expectations can

be activated by background discussions, the reader's own general knowledge about the topic to be read, or even knowledge about what kinds of information are usually presented in particular classes, settings, or types of books. The sources for such hypotheses (quite irrespective of their accuracy or usefulness) are limited only by a person's store of knowledge. The function of these hypotheses about meaning is to narrow the range of possible translations from print to meaning. Hence the readers decode only as much of the printed text as is necessary to confirm or disconfirm their hypotheses. In the event of a disconfirmation, the readers generate new hypotheses, revise old hypotheses, or remain neutral, and continue to decode until new hypotheses become apparent. In top-down models, it is conjectured that readers assume a very active role in the translation process; that is, they use general knowledge and specific contextual information provided by the text as much as they can and their symbol-sound knowledge as little as they need to. While we are not aware of any completely top-down models, those of Goodman (1968) and Frank Smith (1971) come as close as any.

Interactive Models

Not even the most ardent proponents of top-down or bottom-up models would argue that reading is completely a top-down or bottom-up process. A third class of models is based upon a compromise and assumes that the two types of processing are interactive. These models suggest that a

reader begins reading both by generating an hypothesis about meaning and by simultaneously initiating letter and word identification (i.e., decoding). An interactive model resembles a committee meeting, in which different committee members, who have been assigned different tasks, negotiate with one another to achieve a common solution. In the model, the top-down and bottom-up components are assumed to be mutually facilitati The reader assumes either an active or passive role depending upon the strength and accuracy of the hypotheses generated by the top-down component. Rumelhart (1977) has developed a comprehensive interactive model.

Components Included in Most Models of Reading

Earlier we indicated that two necessary assumptions of a model of reading were a translation process and a knowledge structure store. In order for these assumptions to be realized, certain components must be included in a model of reading, either directly or indirectly. Some of these components may not be easily identifiable in the implicit models that teachers and children use. Consequently we need to understand the functions of these components because they bear directly on instruction.

Attention and capacity. Attention and capacity are components which are essential to most reading models. A reader can focus his sensory organs in preparation for performing a task. Such focusing is described as "attending to" or devoting attention to the task.

Related to attention is the concept of capacity. Capacity is the amount of cognitive effort that can be devoted to a given task. Capacity

is assumed to be limited and allocated as a function of the demands of the task. If 80 percent of a person's capacity is devoted to one task, only 20 percent is available to devote to a second task. And, in general, the more difficult the task, the greater the capacity devoted to it. Capacity is related to attention in that capacity is allocated only to tasks on which attention is focused.

Among the reading models currently available, only that of LaBerge and Samuels (1974) deals explicitly with both capacity and attention. However, all models have to assume that readers can attend and that they can direct attention and allocate capacity to different component processes.

For LaBerge and Samuels, intensive practice on a particular task produces "automatic" behavior. As a behavior becomes more nearly automatic, less capacity is needed to perform that behavior. The capacity thus released can be devoted to other tasks. Thus, for LaBerge and Samuels, as word recognition becomes automated, more capacity is available for comprehending. If word recognition is too difficult, little or no capacity is devoted to comprehension. Goodman has a similar view of the roles of attention and capacity. He uses the term "proficiency" instead of automaticity.

Memory. Memory storage is necessary so that there is adequate time for information from the text to be translated (integrated) by the reader. Often memory is separated into three components: iconic, short-term, and long-term memory. It is theorized that information is held in each memory component in the form of a code. Since each component may have a different

code, information must be held long enough so that the information may be translated or recoded for processing at the next stage. Iconic memory is a sensory memory in which information is coded in direct visual patterns. This information decays rapidly, in about 0.5 seconds. Short-term memory is usually phonemic (i.e., representations of sound patterns) and has an effective duration of approximately 30 seconds or less. Long-term memory is usually semantic (i.e., those knowledge structures discussed earlier), and is indefinitely durable.

Sensory capabilities. Another component of almost all reading models is obvious: Sensory capabilities. For reading, it is assumed that the individual can see and hear within normal limits. This is especially true for bottom-up models, since the reading process is initiated by a visual stimulus (text). Although top-down models place less direct emphasis on such sensory capabilities they do admit that those capabilities are involved in the verification of meaning hypotheses.

Perception. Sensory input must be integrated into meaningful patterns. This process is known as perception. Again, every reading model must, somehow, involve perception. For bottom-up models, perception is concentrated on letter or word recognition processes. In top-down models, perception is influenced by the reader's anticipated meaning or perceptual "sets" that are based upon hypotheses generated from prior knowledge. That is, the interpretation of the graphic symbols is influenced by the expectations initiated by top-down processing.

Components Excluded from Most Models

Just as models have common features so they have common exclusions. While these exclusions may not influence the validity of the model as a model of the reading process, they seem to us to be essential for evaluating instructional issues. Hence the exclusion of the components discussed below places a limitation on the value of reading models for making instructional decisions.

Three such exclusions are intelligence, motivation, and instructional setting. Most models implicitly assume that a minimal level of intelligence is required for reading, but specific details are routinely omitted. So long as the text structure does not conflict with the oral language background of a reader, most models do not view motivation as a concern.

Instructional setting is the most serious exclusion in reading models. Goodman has discussed the importance of types of reading material, but most theorists ignore the issue. Included in this issue are concerns for how comprehension is measured (e.g., free recall, multiple choice test items, recognition for sentences stated in the text, question probes), the readers' set (e.g., are they reading for a general impression or to study for a test), and the setting (e.g., in an experiment or at the breakfast table). Intuitively, all of these concerns ought to affect the processes of reading (the strategies readers employ as they proceed through a text) as well as the products of reading (what they can demonstrate that they know about what they have read). So long as models of the reading process

continue to exclude factors like intelligence, motivation, and setting, there will be clear limits on the usefulness of models for making instructional decisions.

The Relevance of Models to Practice

This brief excursion into reading models and their components now complete, we turn to issues of practice. Our goal here is to demonstrate that different models suggest different practices. Our strategy for this section will be to bring up a particular issue or question for which a teacher is obligated to make instructional decisions. Then we will demonstrate how alternative, and sometimes opposing, decisions derive from alternative models.

Initial Program Emphasis

Commercial reading programs differ in the degree to which decoding letters into sounds or, alternatively, getting meaning from the printed page is emphasized early on in the program. Some clearly emphasize decoding. Consider, for example, the myriad of linguistic programs available (e.g., Rasmussen & Goldberg, 1976) or the phonics emphasis programs, such as Basic Reading (McCracken & Walcutt, 1975) or Economy's Phonetic Keys to Reading (Harris et al., 1975). By contrast, other programs are just as clearly concerned with emphasizing meaning, for example, the Curriculum Foundations Series (Robinson, et al., 1965) or the Sounds of ... texts (Martin & Brogan, 1972). Still others (Clymer et al., 1977; Durr et al., 1977) seem to have chosen to give equal emphasis to both decoding and meaning.

Each of these emphases can be supported by a particular class of models. In some bottom-up models, reading differs from listening only in one dimension. In reading, print is stored in iconic memory as visual patterns and is translated into a phonemic code before it can be processed in the same way that oral language is processed. Hence the only additional knowledge six-year-old children need in order to read is a set of rules for translating letters into sounds; then they can let those already existing oral language processes take over. Such a point of view is wholly consistent with an initial decoding emphasis. Parsimony would dictate a direct focus on learning letter-sound correspondences. Such a justification for emphasizing decoding and de-emphasizing meaning is uncannily similar to the rationale given in a 1963 version of one particular linguistic reading series (Rasmussen & Goldberg, 1963) in which teachers are advised to avoid allowing children to use meaning cues (i.e., pictures or context) to identify an unknown word and are discouraged from asking comprehension questions in early instruction.

Alternatively, other reading series demand that meaning be emphasized from the beginning of the program. Nowhere is this emphasis more evident than in the reading series of the fifties and sixties in which getting meaning was so dominant that in the pre-primers (the first three readers) getting meaning meant asking children to interpret pictures and discussing what they already knew about the topic. Furthermore, the conventional wisdom underlying these approaches has always placed a primary emphasis

on the importance of using meaning (context) cues as an aid to identifying unknown words. Perhaps the best example of meaning emphasis approaches is the informal language experience methodology, in which the readers' own oral language (in the form of stories they tell) is recorded by the teacher and becomes the text for reading instruction. Such practices are wholly consistent with a top-down model of reading in which readers start with some notion of the meaning of a text segment and sample whatever print they need to in order to verify or disconfirm their tentative hypothesis.

Finally, the newer basal programs (e.g., Ginn 720), with their dual emphasis on both decoding and meaning, seem to be consistent with an interactive model of reading, one that allows a reader to operate from print to meaning to print depending on the difficulty and familiarity of the text and the task.

Subskills in Reading

Certainly one of the most vociferous debates in reading instruction centers on the existence of subskills in reading (Samuels & Schachter, 1978). Can reading be broken down into components or is it a holistic process? If it can be broken down into components, how finely should it be compartmentalized? How many skills are there? Is initial consonant sound "b" different from final consonant sound "b"?

Here we do not have to rely entirely on inference to make predictions about how different models treat the issue. Samuels, for example, has come

out for teaching subskills, a practice consistent with the components in the LaBerge-Samuels model. Interestingly, Samuels is much more concerned about subskill teaching for poor rather than for good readers, arguing that poor readers seem to need the order and system associated with subskill teaching while good readers seem to discover efficient decoding strategies intuitively and quite irrespective of the quality of instruction. Goodman (Note 1) has argued against a subskills approach, particularly one that places a premium on phonics instruction. Johnson and Pearson (1975) have argued, from essentially a top-down position, that the use of a subskills approach fractionates reading instruction in a way that is at odds with the interrelated nature of the reading process. Even the least enthusiastic of top-down oriented practitioners would argue for minimizing the number of subskills one teaches and monitors.

We should point out again that bottom-up oriented theorists like Samuels and top-down oriented theorists like Smith and Goodman do not disagree on the goals of reading instruction. Both groups want to produce readers who utilize a variety of cues in identifying words and meaning. However, the bottom-up theorists tend to support a structured skills approach while the top-down theorists tend to support a naturalistic, incidental learning approach. Neither Smith nor Goodman denies the fact that children can acquire knowledge about specific sound-symbol correspondences; they simply question the value of teaching such knowledge

directly. It is not clear what position an interactive theorist would take on the subskills issue. On the other hand, top-down and bottom-up models seem to dictate diametrically opposed positions.

Sequencing Skill Instruction

Related to the issue of subskill instruction is the issue of skill sequence. Here, we fear, models are of little help. In principle, one would expect both the Gough and the LaBerge-Samuels models to predispose one toward a rather tight sequence of skills beginning with letter recognition and ending with comprehension. After all, those are more or less independent stages in the models. Yet we must point out the danger involved in trying to achieve a one-to-one match between a model of how a reader processes print and a model of teaching children to read. Simply because Gough suggests that there are independent stages of processing dealing with increasingly larger units of language does not imply that he would recommend teaching those stages in sequence. Indeed, Samuels has suggested that skill sequencing may be more a matter of pedagogical convenience than psychological validity.

Since top-down proponents seem to disparage skill separation in the first place, skill sequencing is not even an issue. If there exists any concern for sequence in a position like Goodman's or Smith's, it is probably a child-oriented sequence which would suggest that children will ask for whatever information they need whenever they need it--not sooner, not later.

Integrat'ng Reading Activities

All models of reading ultimately require that component skills be integrated in order for fluent reading to occur. Yet they differ with regard to how much skill isolation will be allowed during instruction.

Take the seemingly simple issue of phonics instruction. Whenever one decides to teach a phonics skill, one has a choice regarding the size of the contextual unit in which the skill is embedded. For example, initial consonant sound "b" can be taught in relative isolation, as in examples (1) and (2) below. Or the sound of "b" can be embedded in words, as in examples (3) or (4). Alternatively, the phonics can be practiced within sentence contexts, as in example (5) or (6). Bottom-up models, like the LaBerge-Samuels model, would dictate a degree of automaticity or proficiency at each simpler level (e.g., examples (1) or (2)) before going on to more complex integration, e.g., (3) - (6); however, top-down or interactive theorists would likely favor early practice in activities represented by (5) or (6).

(1) Child sees the letter "b"; says /buh/.

(2) Child selects the letter that stands for the first sound in the word associated with a picture of a bat.

(3) Child hears this direction: "What do these words have in common? bat, ball, been, bought?

(4) Child sees bat, cat, pat, rat. Teacher says, "Circle the word bat."

(5) The (boy)/(toy) hit the (ball)/(call) with a (bat)/(pat).

(6) The _oy hit the _all with a _at.

(Child told to find a single letter to fit all blanks)

Amount and Type of Practice

Different models predict differing amounts of practice as well. Some bottom-up models place a heavy emphasis on attention and capacity and "automatic" reading behaviors. Basically they argue that readers need to practice letter and word identification tasks until those processes become automatic, thus requiring less attention and capacity. Only at the point of automaticity in these more basic skills can readers then devote their attention and capacity to comprehension and meaning. Accurate and automatic decoding is prerequisite to comprehension.

Top-down theorists would argue that such a conceptualization misses the point about the interrelated nature of reading processes. Attention to the meaning of a passage or sentence will aid in the word or letter identification process as much as attention to word identification aids the meaning identification (comprehension) process. Further, language, including written language, is highly redundant. Hence it is rarely the case, at least when reading normal text, that a reader has to rely solely on letter or word identification processes to determine the pronounciation of a particular word, syllable, or letter. The text is usually full of semantic, syntactic, and lexical cues that allow readers to short-circuit

letter or word identification processes in their quest for meaning. For example, in the sentence, "The two girls walk down the street," there are three cues for the plural third person verb from "walk."

In summary then, at least one bottom-up model (i.e., LaBerge-Samuels) argues for mastery, and perhaps even overlearning, of lower level skills in order for attention and capacity to be devoted to higher level (comprehension) processes. By contrast, top-down models argue for integrated practice, practice in which a reader operates from "deep structure" (internalized syntactic and semantic knowledge structures) to "surface structure" (the graphic array of the text). Smith has expressed it succinctly in his advice that children learn to read by reading, not by mastering and automating subskills.

Oral Reading Errors

There is probably no issue in which reading models are more diametrically opposed than on the issue of what to do about oral reading errors. Gough has expressed the bottom-up view in unequivocal terms: "The good reader need not guess; the bad should not" (p. 354). LaBerge and Samuels, by virtue of their emphasis on automaticity, are obligated to argue for accuracy in the quest for automaticity. Automatic but inaccurate decoding would be of little help to comprehension. Hence, proponents of bottom-up models are disposed to argue that teachers should instill a set for accuracy in children and that teachers should consider oral reading errors

as an indication that the student does not understand the text. Bottom-up models of reading suggest that oral reading errors should be corrected by the teacher.

Top-down theorists are disposed to dismiss accuracy as a primary concern. They hold this view because of their emphasis on the primacy of meaning. They don't want to encourage wild guessing; that is not the point. Oral reading errors, or miscues, should not be looked upon as an aberrant behavior to be eradicated. Instead, miscues are indications about the kind of processing the child must have been pursuing in order to have generated such a tentative hypothesis as to the meaning of the text.

The point deserves amplification. Since, in a top-down model, readers process from meaning to print, they are constantly engaged in making tentative hypotheses about meaning. For a variety of reasons--general world knowledge, particular language repertoire, and interpretation of previous text segments--they might generate meaning hypotheses at odds with a particular word, phrase, or sentence in a text. Their resulting performance, when examined at the surface level of oral reading, might look as though it contained oral reading errors. Somehow something in the readers' minds or the text has miscued them, predisposed them to generate an interpretation at odds with the surface structure of the text. But the point is not that the miscued word should be practiced until no longer miscalled. Rather, the miscue should serve as a clue to a teacher about what the students' tentative meaning hypotheses must have

been. If any feedback needs to be given, it is probably better to give students a set for a different sentence or passage meaning hypothesis than to offer the correct pronunciation of a miscued word. For example, a child who says "house" for horse could be told that the story is about farm animals.

Selecting Reading Material

We are not certain whether or not models dictate different practical advice on the selection of reading material. For one thing, we cannot imagine any sensible model of reading that would suggest that unfamiliar or meaningless materials are to be preferred to familiar or meaningful content. For another, all models require, or at least strongly imply, some close relationship between written and oral language processes. Hence meaningful materials, using content familiar to students, would seem to facilitate that relationship.

However, bottom-up models, with their early commitment to decoding accuracy and automaticity, would probably be more tolerant of materials which deviated from children's oral language backgrounds. Hence, they would not be so harsh on the unfamiliar words and sentence patterns found in linguistic readers. One might expect bottom-up models to prefer easily decodable text (i.e., words with regular spelling-to-sound patterns). Top-down models by contrast, would prefer easily comprehensible text (i.e., containing familiar syntactic and semantic structures).

Diagnosing and Remediating Reading Difficulties

What do alternative models suggest about diagnosis of reading difficulties? Quite different strategies is our conjecture. Bottom-up models, with their emphasis on subskills, sequencing, and automaticity at various stages would seem to find a comfortable ally in a skills management approach to diagnosis. You are probably familiar with this "teaching to weaknesses" approach: (1) define a set of objectives, one for each skill or interest, (2) place them in a logical sequence, (3) write a test for each objective, (4) administer the test to a group, (5) examine skill profiles, looking for peaks and valleys, (6) beginning with the earliest skill in the sequence, remediate all the weaknesses.

Top-down models, alternatively, are likely to find an ally in a "teaching to strengths" approach. That is, (1) determine the components of the reading process in which a student demonstrates proficiency, and (2) capitalizing on those strengths, help the student learn how to generate meaning hypotheses, gathering whatever data he needs to confirm or disconfirm those hypotheses. A teacher's greatest instructional concern becomes helping children develop resources for making meaning hypotheses on their own. For example, language experience stories, where the content is generated by the students, almost guarantee that students will be able to generate such hypotheses. Similarly, text previewing activities assure that students will make predictions. Activities which involve the cloze procedure will also facilitate hypothesis generation.

Some Conclusions

We have attempted to demonstrate that teachers' theoretical orientations toward the reading process make a difference in how or what they teach. Put differently, we have tried to show that different reading models suggest different instructional strategies and predispose a teacher to alternative decisions about issues in teaching reading.

In this paper we have not taken a particular position on which model is best, nor have we indicated which instructional practices we prefer. It has not been our goal to recommend one model or one strategy over another; we are content to point out that alternative practices can be derived from (or at least can be seen to be consistent with) alternative models of the reading process. Nor have we discussed the full range of decisions that teachers must make about reading instruction. Rather, we have adopted the more modest goal of illustrating how a sample of decisions can be evaluated against underlying models rather than the more ambitious goal of specifying all possible teacher-made decisions.

We believe that it is the role of classroom oriented researchers to provide some answers to questions about which models and which methods are "best." In so doing, we proclaim our commitment to a close working relationship with classroom teachers so that we may investigate research questions which will help to solve important practical issues (such as, which strategies work best) as well as theoretical issues (such as, which model provides the best explanation of reading).

Educational practitioners sometimes view researchers and theorists as if they were engaged in endeavors totally alien to classroom practice. Researchers and theorists often decry the absence of research sophistication among practitioners. Such mutual misunderstandings cannot be tolerated if we are to achieve our mutual goal of improving the way we teach reading to students of differing ages, social backgrounds, expectations, and interests. Researchers must improve the quality of their communication with practitioners. They must cease to rationalize their lack of credibility with statements like, "The teachers do not see the relevance of my work," or that, "It is up to teachers to translate these ideas into practice." Researchers must demonstrate the relevance of their ideas and take the primary responsibility for translating them into practice. Similarly, teachers must do a better job of communicating their needs to researchers, so that they will conduct research on problems that matter. And teachers must accept at least some of the responsibility for translating theory and research into practice. In short, relevance is a two-way street; unfortunately, both researchers and practitioners seem to have avoided traveling that street at all, complaining of deep potholes, poorly timed stoplights, and irritating traffic patterns.

In the meantime, classroom teachers cannot wait for definitive answers. They must make instructional decisions daily for which there is no solid evidence one way or another. As a result of reading this and other articles that deal with the relationship between theories,

models, and practice, they might begin to make decisions which are theoretically consistent with one another (i.e., stem from the same model). At the least, they should be in a position to recognize when one decision is inconsistent with another. And ultimately we hope they will be able to articulate and make explicit whatever implicit models seem to guide their teaching behavior and their students' learning behaviors.

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